UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,713	09/17/2003	Katsunori Yanagida	031174	2235

38834 7590 04/14/2006

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER	
KALAFUT, STEPHEN J	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 04/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/663,713	YANAGIDA ET AL.	
	Examiner	Art Unit	
	Stephen J. Kalafut	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *19 December 2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2 and 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekino *et al.* (US 6,794,089) in view of Fujita *et al.* (US 6,884,546).

Sekino *et al.* disclose a battery comprising an electrolyte solvent including a saturated cyclic carbonic ester such as ethylene and propylene carbonates, and a cyclic carbonic ester with a C=C double bond, such as vinylene carbonate or vinyl ethylene carbonate (column 6, lines 45-51), optionally also containing a chain carbonic ester such as diethyl carbonate, ethyl methyl carbonate or dimethyl carbonate (column 19, lines 16-21). The negative electrode includes a carbon material such as graphite (column 10, lines 51-57). Sekino *et al.* do not disclose the amount of the cyclic carbonic ester with the C=C double bond in relation the anode capacity. Fujita *et al.* teach that the amount of vinylene carbonate should be kept no more than 15 weight percent because any more would not produce any cycle life improvement (column 11, line 67 through column 12, line 4), in a cell with a graphite anode (column 5, lines 37-49). Thus, Fujita *et al.* give the artisan guidelines for choosing an appropriate amount of vinylene carbonate to include in the cell. Because Sekino *et al.* also disclose a cell with a graphite anode, the teachings of Fujita *et al.* would be applicable thereto. For this reason, it would be obvious to optimize the amount of vinylene carbonate in the cell of Sekino *et al.* as taught by Fujita *et al.* Regarding claim 6, the skilled artisan would be motivated to optimize the mass concentration of the

negative active material, since the amount thereof would affect the amount of electricity that the cell may produce.

Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekino *et al.* in view of Fujita *et al.* as applied to claim 2 above, and further in view of Suzuki *et al.* (US 6,664,008).

While Sekino *et al.* teach that their graphite should have a d_{002} not larger than 0.336 nm (column 11, lines 5-6), they do not disclose the present values of L_C or (I_{110}/I_{002}). Suzuki *et al.* disclose graphite for use in a battery anode, which has a d_{002} of 0.335 to 0.337 nm, and a L_C of at least 30 nm (column 4, lines 13-51). Because these distances are the same as presently claimed, the X-ray diffraction peaks would have a similar ratio. Because Suzuki *et al.* teach the use of their graphite as an anode material for occluding and releasing lithium (column 4, lines 13-19), the same purpose as in Sekino *et al.*, it would be obvious to use the graphite of Suzuki *et al.* as the anode material in the cell of Sekino *et al.*

Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekino *et al.* in view of Fujita *et al.* as applied to claim 1 above, and further in view of Nakanishi *et al.* (US 2002/0061443).

Sekino *et al.* and Fujita *et al.* do not disclose the present cathode material, which contains a Li-Mn composite oxide and a Li-Ni-Co-Mn composite oxide. Nakanishi *et al.* disclose a cathode for a lithium cells comprising a mixture of these two types of oxides (section 0012) in the presently recited range of relative amounts (section 0014). This mixture produces an ease of

electric charge migration and thus a large current output in a short time (section 0013). For this reason, it would be obvious to use the cathode mixture of Nakanishi *et al.* in the cell of Sekino *et al.*, modified according to the teachings of Fujita *et al.*

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekino *et al.* in view of Fujita *et al.* and Nakanishi *et al.* as applied to claim 12 above, and further in view of Zhong *et al.* (US 5,700,597).

This claim differs from the above combination by reciting that the Li-Mn composite oxide includes a second metal, which is at least one of Al, Co, Ni, Mg and Fe. Zhong *et al.* disclose a cathode material comprising a Li-Mn composite oxide that also includes a second transition metal, where the second metal partially replaces the Mn (column 3, lines 40-43). Specific examples of the second metal are Ni and Co (column 11, lines 16-18). These compounds provide good cycling performance (column 3, lines 27-32) while avoiding the dangers of too high a surface area (column 3, lines 8-11 and 35-39). For these reasons, it would be obvious to use the Li-Mn composite oxide of Zhong *et al.* in place of that of Nakanishi *et al.*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of copending Application No. 10/604,826 (published as US 2004/00110064). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the other application would fall into or at best overlap the present claims. Note the recitations, in the '064 publication, of a saturated cyclic carbonic ester and a cyclic carbonic ester with a double C=C bond (claim 1), a Li-Mn composite oxide cathode (claim 3), a Li-Ni-Mn-Co composite oxide (claim 6), vinylene carbonate (claim 7), a chain carbonic ester (claim 8) and a graphite anode (claim 9).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kitagawa *et al.* (US 6,455,199) disclose graphite powder used as an anode material. Kotato *et al.* (US 6,929,885) disclose a cell with an electrolyte containing vinylene and vinyl ethylene carbonates. Yanagida *et al.* (US 2004/0062993) disclose a graphite anode material characterized by the relationship of L_C and L_A. Kitao *et al.* (EP 1,391,959) is the European equivalent of the above-mentioned U.S. publication 2004/00110064.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sjk